

Claims

1. An apparatus comprising:  
a gear box having a housing with a bottom, four sides, and an at least partially open top, a cover over the at least partially open top, an input shaft inserted through an opening in one of the sides, an output shaft perpendicular to the input shaft inserted through an opening in the bottom, a first spiral bevel gear attached to the input shaft and a second spiral bevel gear attached to the output shaft and being engageable with the first spiral bevel gear, the input shaft having an axis, the measurement from the axis of the input shaft to the bottom of the housing being greater than the measurement from the axis of the input shaft to the cover.
2. The apparatus of claim 1 wherein the input shaft has a generally horizontal axis and the output shaft has a generally vertical axis.
3. The apparatus of claim 1 wherein the cover has an inner surface with a recess, the recess providing clearance space for the first spiral bevel gear.
4. The apparatus of claim 1 further comprising threaded fasteners connecting the cover to the housing.
5. The apparatus of claim 1 further comprising a mower deck and a platform, the gear box positioned between the mower deck and operator platform.
6. The apparatus of claim 1 further comprising a rotary cutting blade mounted to the output shaft.
7. The apparatus of claim 1 further comprising a pulley mounted to the output shaft, and a belt wound around the pulley turning a plurality of rotary cutting blades mounted on vertical shafts.
8. The apparatus of claim 1 wherein the input shaft is connected to a

transmission.

9. An apparatus comprising:

a grass mowing machine having an engine, a mower deck under which at least one rotary cutting blade is positioned to rotate, and a platform at least partially over the mower deck;

an input shaft having a generally horizontal axis operably connected to the engine, and an output shaft having a generally vertical shaft connected to the at least one rotary cutting blade; and

a gear box having a housing positioned between the mower deck and the platform, the housing having an internal volume containing a first spiral bevel gear mounted to the input shaft and a second spiral bevel gear mounted to the output shaft and meshed with the first spiral bevel gear; the internal volume below the generally horizontal axis of the input shaft being greater than the internal volume above the generally horizontal axis of the input shaft.

10. The apparatus of claim 9 further comprising a first opening in the housing for receiving the input shaft and a second opening in the housing for receiving the output shaft.

11. The apparatus of claim 9 wherein the housing further comprises a removable cover.

12. The apparatus of claim 11 further comprising an inwardly extending collar in the removable cover, a roller bearing positioned in the collar around the output shaft.

13. The apparatus of claim 11 further comprising an internal recess in the removable cover.

14. An apparatus comprising:

an engine, a transmission connected to the engine, and a generally horizontal shaft extending from the transmission, the generally horizontal shaft having a first end and

a second end;  
a rotary cutting blade with a generally vertical shaft attached thereto, the generally vertical shaft having a first end and a second end; and  
a gear box having a top surface and a bottom surface, the gear box enclosing the first end of the generally horizontal shaft and the first end of the generally vertical shaft, the generally vertical shaft extending through the bottom surface of the gear box, the gear box housing a pair of spiral bevel gears to change the transmitting direction from the generally horizontal shaft to the generally vertical shaft, the measurement from the generally horizontal shaft to the bottom surface of the gear box being greater than the measurement from the generally horizontal shaft to the top surface of the gear box.

15. The apparatus of claim 14 further comprising a pulley connected to the generally vertical shaft, and a belt wound around the pulley to turn a plurality of rotary cutting blades.

16. The apparatus of claim 14 further comprising a mower deck and an operator platform over the mower deck, the gear box positioned between the mower deck and operator platform.

17. The apparatus of claim 16 further comprising an operator seat mounted on the operator platform.

18. The apparatus of claim 14 wherein the top surface of the gear box comprises a cover attached thereto with threaded fasteners.

19. The apparatus of claim 14 wherein the pair of spiral bevel gears have different diameters.

20. The apparatus of claim 14 wherein the generally vertical shaft has a first section with a different diameter than the second section.